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Summary

The Pacific Exchange supports decimal pricing. We believe it offers significant benefits to both individual and institutional investors. We have a strong interest in making sure that it is appropriately implemented so that it both delivers those promised benefits and avoids placing investors at unintended risk.

While some have suggested that the conversion to decimals can be made at the same time the markets are responding to the Year 2000 problem that is simply not the case. The Year 2000 and decimalization projects are fundamentally different and wholly independent. At the PCX, the Year 2000 fixes for our options systems will be installed this month, and the equities systems will be fully converted by yearend. Industry-wide testing of all systems is scheduled to begin in early 1998 and run throughout 1999.

We should be mindful of at least three sets of critical issues as the markets move toward decimalization. Each carries risks to investors that could outweigh the benefits of conversion. First, private market information vendors are currently struggling with the amount of data available from the exchanges. Their capacity constraints are likely to be exacerbated by the higher trading volumes expected with decimal pricing. Second, higher trading volumes also generate higher quotation traffic, which may erode the timeliness of quotes disseminated and the ability of investors to execute orders at disseminated quotes. Third, the size of the minimum tick has such sweeping implications for every systems change necessary for the decimalization conversion that it ought to be standardized.

The magnitude of this project falls between the level of effort required for the Year 2000 problem and the conversion to T+3 settlement. The issues that must be addressed are not insoluble, so long as the same degree of thoughtful deliberation, careful planning, and high-level coordination governs the transition. Ignoring those issues will not only deny investors the full economic savings of decimalization. It will expose them to risks of systems gridlock and market failure.

The Pacific Exchange stands ready to work with the Congress, the Securities and Exchange Commission, and the industry to ensure that decimalization is implemented in a fashion that both achieves its promised benefits to investors and maintains public confidence in market integrity.

Mr. Chairman, Members of the Subcommittee, I am Robert Greber, Chairman and Chief Executive Officer of the Pacific Exchange (PCX). It is a privilege and a pleasure to be with you this afternoon, and I thank you for soliciting our views on decimal pricing and H.R. 1053: The Common Cents Stock Pricing Act of 1997. You have already heard from academicians, theoreticians, and consumers of market services. Today you will hear from those who are responsible for daily market operations, and I am very pleased with the seriousness and comprehensiveness of your inquiry.

The Pacific Exchange supports decimal pricing.

The questions for us are simply when does decimalization arrive and how can we best make it work? How can we effect this change so that it yields the promised benefits to investors yet maintain seamless market operations and integrity? How can we deliver on that promise *and* avoid unintended consequences that could put investors at significant risk? Any proposal that enhances competition and offers investors better prices ought to be carefully and deliberately pursued. As the leader of an exchange -- a self-regulatory organization whose paramount obligation is the protection of public investors -- that is the *only* reasonable, responsible, and rational approach I can take to this issue.

With this statement, I want to remind the Subcommittee of the progressive record of public service and market innovation the Pacific Exchange has built over its 115-year existence. In addition, I want to begin -- *today* -- identifying some of the critical issues that the securities industry must address as we move toward decimal pricing. These issues are many and they are complicated, yet they are not "rocket science." In many ways (but not all), they are as straightforward as the Year 2000 and three-day settlement problems. There is no reason to believe that our success in meeting those challenge will not mirror our eventual success in this transition.

The Pacific Exchange: A Rich Tradition of Innovation. The Pacific Exchange is America's third most active stock exchange, and the world's third largest stock options market. Founded in 1882, we are the only exchange in the world operating trading floors in two cities. More than 2,600 issues are traded on our San Francisco and Los Angeles equities floors, including all of the most active issues listed by the New York and American stock exchanges, as well as a number of smaller, emerging growth companies that rely on our agency-auction market for their capital needs. Options on nearly 600 listed and Nasdaq stocks trade on our San Francisco options floor, and that product has grown so significantly that, earlier this year, we changed our name and logo to reflect the fact that we are more than simply a traditional stock exchange.

My institution prides itself as the source of major technological innovation for American securities markets. We have a long history of developing systems that provide substantial savings and benefits to public investors, be they institutions or individuals. Innovation has been essential to our competitiveness. And we are more competitive today than ever. More important, we believe innovation is central and critical to our role as a public marketplace.

Nearly 40 years ago, for example, the Pacific adopted continuous net settlement processes. At that time, the end of the trading day saw couriers scurry about Wall Street delivering satchels of cash and stock certificates from firm to firm, individually settling each and every trade. Our innovation was not adopted in New York until many years later, when the New York Stock Exchange was forced to close every Wednesday because Wall Street was choking on paperwork. At that time, the Big Board averaged just 12.5 million shares each day. The PCX would not be trading 12.5 million shares today (nor would New York average nearly half a billion), if we had not developed continuous net settlement.

In 1969, the Pacific was the first exchange to put a computer on a trading floor, and automate the routing, execution, and reporting of public orders. Its installation was opposed by some Pacific specialists, one of whom cut the wires to his terminal with a pair of garden shears the morning it was launched. Today, the fourth generation of that system handles more than 90 percent of all orders sent to the PCX, making us the most automated stock exchange in the country.

In 1975, Congress mandated the creation of the National Market System, which was initiated with the Intermarket Trading System (ITS) in 1978. ITS is based on technology the PCX developed to link its Los Angeles and San Francisco trading floors. Bill Lupien, then a PCX specialist for Mitchum Jones and Templeton, was a leader of the industry committee that designed and developed ITS. Originally, ITS was designed to both electronically link the exchanges and route orders among them, and to provide a mechanism for automated trade execution. This second feature, however, has never been implemented, largely because of the opposition of primary markets. Changes to ITS (as well as the consolidated tapes and quotation services) require the unanimous approval of all exchange participants. It seems highly unlikely that ITS will ever achieve its full potential -- and serve as the true National Market System Congress envisioned -- so long as this requirement of unanimity remains in force.

Limited as it is, ITS has provided important benefits to investors. Before its introduction, pricing disparities in the same security were common among exchanges. Specialists were under no obligation to honor quotations from other markets, even where those quotes were better than their own. With ITS, there is a single national best bid and offer (NBBO), and a requirement that all trades in ITS-eligible stocks must be executed at prices equal to or better than the NBBO. ITS leveled the playing field among exchanges and specialists, and provided the National Market Exchanges (Boston, Chicago, Philadelphia, and the Pacific) the ability to compete effectively with the primary markets in New York. That competition narrowed spreads and generated significant savings for investors.

Next year, the PCX intends to introduce its boldest innovation yet -- OptiMark. OptiMark is a revolutionary trading system, a radical departure from existing markets and electronic communications networks. OptiMark will allow investors to enter orders in *three* dimensions, and guarantees that their trading interests will remain absolutely anonymous. OptiMark will narrow spreads. It will provide investors greater opportunities to meet directly, thus raising their chances for improved prices. For the first time, the liquidity that investors provide to the market will have a chance to interact, to meet directly without the intervention of dealers and specialists. And OptiMark is being designed to accommodate decimal pricing.

OptiMark is the product of a strategic alliance among the Exchange, Dow Jones & Company, State Street Bank, IBM, the Chicago Board Options Exchange, and OptiMark Technologies, founded by Bill Lupien. It is based on extensive consultations with institutional investors, who have given us the same information that was provided to the Subcommittee this past week by Harold Bradley, Vice President and Director of Equity Trading, American Century Investment Management, and Peter Jenkins, Managing Director, Scudder, Stevens & Clark. The results of the Trader Forum survey submitted by Mr. Bradley, for example, indicate that of nine market features most desired by institutions, "order anonymity" and "integration of price discovery, execution, and transaction reporting," rank highest. ("Decimal prices" are a distant eighth.) OptiMark is intended to meet these requirements.

OptiMark will be introduced as a function of the PCX, which will be the first exchange to make it available to equities investors. We expect other markets to utilize it as well. We require SEC approval to bring OptiMark to fruition, and, as stated, plan to launch it in 1998.

Surveys submitted by Bradley and Jenkins, as well as testimony from others at the past week's hearing, indicate a strong desire for a Consolidated Limit Order Book (CLOB) that is accessible by investors. These witnesses noted that, currently, only the size associated with the NBBO is displayed to investors. The depth of limit orders carried on a specialist's book is visible only to the specialist. The PCX has a CLOB in development, which will serve to better coordinate the trading activities of its San Francisco and Los Angeles specialists for each stock dually traded with a primary market. With specialists in two cities, we have developed experience in coordinating open limit order books. The CLOB is intended to provide a higher level of automated coordination.

Some suggest that, like the PCX technology that underlies ITS, the PCX CLOB may become a standard adopted by other market centers. A note of caution is in order. Competition between markets and market participants is healthy. If the industry adopts a national CLOB, it may, in effect, be creating *one* market. That is not necessarily desirable, particularly if the result is a loss of benefits accrued from competition and a loss of incentives for innovation.

The foregoing review of PCX innovations should establish for the record that the Exchange takes seriously the importance of bringing forward fundamental market changes that benefit public investors, even when those changes may adversely impact the perceived interests of its members and member firms. If a change in market structure, operations, or regulation is in the public interest, it is also in the Exchange's interest, and it is my responsibility as CEO to persuade PCX members that it will be in their interest as well.

The Year 2000 Problem. This past week, the Subcommittee received testimony suggesting that the transition to decimalization could occur simultaneously with the systems changes necessary to address the Year 2000 problem. Unfortunately, that is simply not true. Indeed, the linkage of these two issues, at best, reflects a fundamental lack of understanding of why Year 2000 systems changes are necessary. At worst, that linkage is a distraction.

There is nothing arbitrary about the Year 2000 problem. Come January 1, 2000, any system that has not been fixed will be useless and, more important, could be the source of potential disaster. We have no choice in this matter. We have no discretion over whether -- or when -- to address the problem. The deadline for project completion is a date certain and fast approaching, unless of course Congress legislates a change in the calendar. That is not the case with decimalization, where you and we have discretion over its implementation. Given the potential benefits of decimal quotes and prices, sooner is clearly better than later, but unlike Year 2000, later is not a disaster.

There is another fundamental difference between the Year 2000 and decimalization projects. The systems changes needed for Year 2000 are essentially *internal* issues: Few data records containing dates pass between market participants. That is clearly not the case with decimal prices, where nearly *every* record must be converted from fractions. Decimalization will therefore require a significantly higher level of industry coordination to achieve.

Nevertheless, let us use the Year 2000 issue as a benchmark, to gain some better understanding of what is required to implement decimal pricing. At the Pacific, we began working on Year 2000 issues in the summer of 1995. Our equities trading systems will be fully updated by the first quarter of 1998. Changes to our options systems will be completed by the end of *this month*.

Tomorrow night, the Exchange will be profiled on MSNBC for being ahead of the curve, for making Year 2000 changes well in advance of other businesses and industries.

Two factors drove our decision to implement these changes well in advance of others. First, we will begin trading stock options that expire in January 2000 next May 19. Second, given the fact that the problem affects nearly every business, institution, and government agency, we wanted to secure the services of the best outside resources available, at a time when they are still available -- and still affordable. We did not want to pay premium prices for third-rate talent, simply because the demand for programmers by larger institutions had locked up the best and driven prices higher for the rest.

Even with consultants, this project is consuming one third of the PCX full-time systems development staff for nearly a year. The changes affect nearly every system we operate, and involve more than one million lines of code. We are managing the project, conducting the quality assurance tests, and implementing the programming changes (which are being done by consultants) in-house. Without the consultants, our entire development staff would be devoted to the Year 2000 conversion. This would not be an acceptable alternative, given the other projects scheduled over the next three years, including OptiMark, the CLOB, and more automated regulatory surveillance systems.

The project is being coordinated with others in the industry. The Securities Industry Association (SIA), for example, has four working committees active in this effort. The SIA's Exchange and

Utilities group includes the options and equities exchanges, the National Securities Clearing Corporation, the Depository Trust Company, and other participants essential to the markets' infrastructure. We will be testing the conversion programs with entities linked to the Exchange throughout 1998-99. An industry-wide test of the options systems will be conducted early next year, with the equities markets scheduled for testing beginning in late 1998 and continuing through 1999.

Given those time frames, it is clearly impossible to convert our systems to decimals while simultaneously fixing the Year 2000 problem, which, from a programming standpoint, is nearly a completed project. They are wholly independent.

A preliminary assessment indicates that the conversion to decimals will be at least as complex a project, commanding the same types and levels of resources. It may require twice the effort. Having made a decision to affect the Year 2000 conversion earlier than others, it would be ironic if we had to now go into the market for consulting services for the decimals' conversion and compete for resources others are seeking for the Year 2000 problem. Some of our systems carry price data in decimals, though currently, that information is primarily used only for internal purposes. Market data provided to traders on the PCX floors appear as fractions, and the data display programs may require the greatest change. We are quite keen on securing more definitive estimates on this question, and hope to have them in hand later this year. I would be happy to share them with the Subcommittee, if they are of interest. In beginning to think about a decimalization conversion, however, several sets of issues come to mind that the Subcommittee may find helpful and illuminating.

Systems capacity. Decimalization advocates speculate, with some justification, that spreads will narrow and trading volumes will rise after the markets cease trading in fractions. They note that this was the experience of the Toronto Stock Exchange following its conversion, and that volumes in this country rose after the SEC banned fixed commissions, and again after the implementation of ITS. We have no reason to believe they are incorrect. Indeed, volumes in the United States may continue rising (as they have for the past several years) simply because more investors are attracted to the securities markets.

If decimalization's advocates are right, there are two operational impacts we ought to be concerned about. If spreads narrow and volumes rise, quotation traffic will also increase. Higher volumes would be a net positive in that case, because it would indicate investors' transaction costs have diminished. Higher quotation traffic, however, is not necessarily a net positive development, if it requires greater resources than the benefits generated. This is discussed more fully below.

There are system capacity problems in our markets *now*. The situation is particularly acute for the options product. As stock prices rise, more stocks meet the listed options eligibility standards. In 1996, the PCX added 191 new issues to its options roster, for example, and the pace of new listings accelerated in the first quarter of 1997. The other options exchanges have been equally aggressive. And because the market has become more volatile, the options exchanges have also been listing additional series for their existing underlying stocks.[1] Finally, the proliferation of multiply traded options issues (i.e., options on underlying stocks that are traded by two or more options exchanges) is exacerbating the problem. To keep pace, the Options Price Reporting Authority (which is equivalent to the equities markets' consolidated quote and tape services) is increasing the capacity of its data transmission lines by 40 percent, to 13,000 messages per second.

Private market information vendors, however, do not presently have sufficient capacity to disseminate all of the information generated by and available from the options markets. They have begun to limit arbitrarily the kind and amount of information available to brokerage firms and investors, displaying, for example, quotes in only the most active options series. That is a troubling development. It means that individual and institutional investors cannot obtain the same level of market information that is available to professional floor traders. While some vendors are planning system capacity upgrades, that is not the case for all.

Some in the industry suggest that the options exchanges should slow the pace of new issues and/or delist some existing issues. On both competitive and regulatory grounds, we find such an approach anathema, particularly as a long-term solution. We do not believe that investors' opportunities should be artificially constrained by the unwillingness or inability of private firms to make capacity upgrades.

[1] An underlying stock is an options "issue." The individual put and call options available for each issue, which are defined by strike price and expiration date, are a "series."

Quotation volumes. Decimal pricing will result in higher quote traffic, even if trading volumes remain at current levels. The level of increases will be driven by the size of the minimum tick. Consider, for example, a quoted market that is 1/4-point wide ($25 bid, 25 1/4 offered) with 1/8-point minimum ticks. Such a spread can only be narrowed by raising the bid (or lowering the offer) by an eighth. With decimals, if the minimum tick were a nickel, there would be four new quotes that could narrow the spread ($25.05, 25.10, 25.15, and 25.20); if it were a penny, 24 improved prices would be available.

Given current vendor capacity constraints, this is clearly an issue as the markets move toward decimal pricing. (It may in fact become a problem as more stocks are quoted and traded in sixteenths.) If vendors cannot accommodate higher and faster quotation traffic, investors may become frustrated by their inability to obtain reliable real-time quotes, as well as by orders executed away from displayed markets, where quotes are not up to date. Here again, minimum tick size will influence the magnitude of the potential problem. With penny ticks, a buy order executed at a price two or three cents higher than the quote displayed at the time of order entry is less costly than one executed in nickel or eighth tick markets. The lower the tick, the less the market has to move from increment to increment. In that sense, markets may become more volatile (at least in terms of disseminated quotes) with the advent of decimalization.

Of greater concern is the possibility of market information gridlock, of essential systems grinding to a halt or running at such delayed rates that investors' confidence in market integrity is compromised. When the market crashed in 1987, the consolidated tapes ran hours late for a few days. The lines feeding data to the tape have since been upgraded, and we need to ensure that they are (and will be) adequate to handle the increased volumes and quote traffic anticipated with decimal pricing.

More recently, implementation of the SEC's new order handling rules (which primarily, though not exclusively, affected Nasdaq dealers) nearly drowned the options markets for Nasdaq stocks. In our view, those rules (while appropriate) and the system changes they required, were not adequately tested before launch. We cannot afford another, similar experience. The securities industry is planning extensive tests on its Year 2000 fixes. That same level of preparation is essential for the effective transition to decimalization.

The SEC has asked the ITS Operating Committee to consider automated quotations in size generated by principal traders, quotations that would equal or better the NBBO. I am informed that is a six-to-twelve month effort. If adopted, it is likely to make quote traffic and capacity problems worse. Granted, the impact will probably be felt only in the short-term. But it is a weakness in need of a remedy.

At some point, we have to make a risk-benefit calculation. The gains to investors from narrower spreads may be outweighed by the potential for increased risk.

Minimum ticks. Every witness at the past week's hearing argued in favor of decimalization and in support of this bill. But only one witness highlighted the central, critical question that lies at the heart of the issue: What will be the minimum tick in a decimal environment? We do not believe, as some argue, that this question is simply a “competitive” issue best left to market forces for resolution. The answer drives every system change and upgrade necessary to implement decimal pricing, and all future upgrades to system capacity necessary to handle volume and quote traffic increases. How many digits to the right of the decimal point should we plan for: two (dimes, nickels or pennies), three (eighths), four (sixteenths), five (thirty-seconds), seven (one hundred twenty-eighths), or some higher number? Intuitively, one assumes that the potential investor benefit of smaller increments at some point is outweighed by the system costs necessary to support smaller ticks. And those costs, of course, are ultimately borne by investors as commission and transaction fees.

As you heard this past week, some are loathe to accept minimum ticks established by government fiat (or any other means divorced from competitive forces). The practical implications of this determination, however, are so sweeping -- for exchanges, for market utilities, and for investors -- that standardization of minimum tick size seems both necessary and appropriate. Once established, standardized ticks need not be sacrosanct. They can be adjusted over time as new technology capable of handling smaller increments becomes available. But absent standardization, the potential for an uncoordinated rush to lower and lower ticks could drive the markets into gridlock.

The PCX believes this is an issue that should be considered by the SEC, in the development and issuance of the rules required by this legislation. At the very least, the Commission should seek to ensure that there are no systemic impediments to price competition because of minimum ticks. It should lead a coordinated effort to eliminate barriers to price competition, one that provides all market participants with the same access and abilities.

Finally, we believe the SEC should also address the opportunity for professional traders to "step ahead" of public investor orders by marginally improving disseminated market quotes. With fractional prices, dealers and specialists can change prices by as little as one sixteenth ($.0625). With decimals, the cost of that action could drop to one cent (or lower).

Conclusion. The Pacific Exchange supports decimal pricing. We believe that a systematic, thoughtful approach to decimalization is imperative. There are real and significant issues that must be respected and addressed as the markets make this transition. If they are ignored, the markets may suffer severe, short-term disruptions, which will certainly work to the detriment of investors' well-being. In an effort to provide investors better prices, we should not place them at greater risk. We stand ready to work with the Congress, the SEC, and the industry to ensure that decimalization is implemented in a fashion that both achieves its promised benefits to investors *and* maintains public confidence in market integrity.